

**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF TEXAS  
HOUSTON DIVISION**

DYNAENERGETICS EUROPE GMBH, and  
DYNAENERGETICS US, INC.,

Civil Action No: 4:20-cv-02123

**DYNAENERGETICS EUROPE GMBH AND DYNAENERGETICS US, INC.'S  
OPENING CLAIM CONSTRUCTION BRIEF**

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Pursuant to the Court’s Docket Control Order (Dkt. 55) and Local Patent Rule 4-5(a), Plaintiffs DynaEnergetics Europe GmbH and DynaEnergetics US, Inc. (collectively, “DynaEnergetics”) respectfully submit this Opening Claim Construction Brief in support of their proposed constructions for the disputed terms of the asserted patents.

## **I. SUMMARY OF THE ARGUMENT**

Before the Court are four disputed terms for construction—one from U.S. Patent No. 10,429,161 (the “’161 Patent,” Dkt. 1-1) and three from U.S. Patent No. 10,472,938 (the “’938 Patent,” Dkt. 1-2) (collectively, “Patents-in-Suit”):

- “directional locking fin” (’161 Patent)
- “tandem seal adapter” (’938 Patent)
- “signal-in connector” (’938 Patent)
- “through wire connector” (’938 Patent)

Each of these terms has a well-understood meaning in view of the claims and specification, which the jury will readily understand, and does not require construction. Defendant Hunting Titan, Inc. (“Hunting”), however, proposes constructions that violate numerous well-established claim construction principles—rewriting the claims to depart from their plain language or importing limitations from the specification and wholly disregarding the express claim language and the intrinsic record—ostensibly to manufacture otherwise non-existent non-infringement positions. DynaEnergetics respectfully requests that the Court reject Hunting’s proposed constructions and adopt the plain and ordinary meaning of each disputed term. If the Court believes construction would be helpful to the jury, DynaEnergetics offers alternative constructions for the terms “directional locking fin” and “tandem seal adapter,” consistent with their plain and ordinary meaning in view of the claims and specification.

## **II. NATURE AND STAGE OF THE PROCEEDINGS**

On January 30, 2020, DynaEnergetics filed a lawsuit against Hunting, alleging infringement of its '161 and '938 Patents by Hunting's H-1 Perforating Gun System. *See DynaEnergetics Europe GmbH v. Hunting Titan, Inc.*, No. 17-cv-3784, Dkt. 105 at 4 (S.D. Tex. July 16, 2021) (describing procedural history).

After DynaEnergetics brought this action, Hunting filed post grant review petitions challenging the validity of the '161 and '938 Patents. *See id.* at 5-6. The Patent Trial and Appeals Board declined to institute review of either patent, finding the grounds proposed by Hunting insufficient to raise a substantial likelihood of unpatentability. *See* No. 17-cv-3784, Dkt. 72-30 (denying institution of PGR2020-00072 regarding the '161 Patent); No. 17-cv-3784, Dkt. 72-31 (denying institution of PGR2020-00080 regarding the '938 Patent). Moreover, with respect to the '161 Patent, the PTAB concluded that "[t]here is no evidence of record that any claim term [of the '161 Patent] should take on a special meaning that departs from its ordinary meaning" and "all claims terms should take on their ordinary and customary meaning." No. 17-cv-3784, Dkt. 72-30 at 11. DynaEnergetics has not asserted the '161 Patent or the '938 Patent in any other cases. Therefore, the '161 and '938 Patents are not subject to any parallel proceedings.

On August 27, 2021, the parties filed a Joint Claim Construction Statement, identifying two terms with agreed-upon constructions and four disputed terms. Dkt. 61. DynaEnergetics filed its Written Technology Tutorial on September 3, 2021. Dkt. 65.

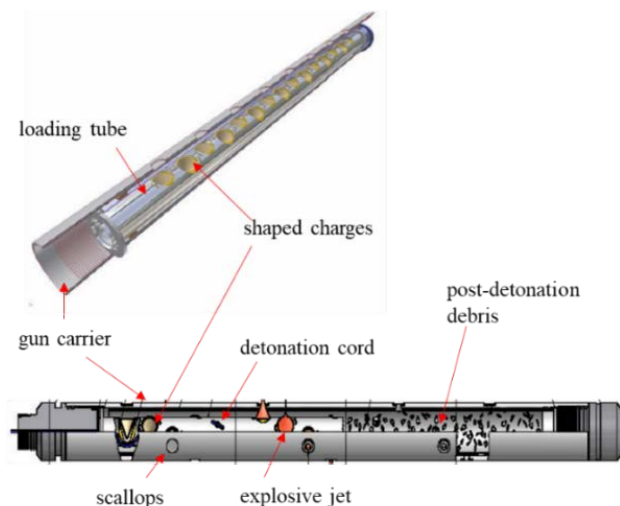
## **III. BACKGROUND**

### **A. Overview of the Technology**

The '161 and '938 Patents relate to oil and gas wellbore perforating equipment. Specifically, and as set forth in more detail below, the '161 Patent is generally directed to modular aspects of a perforation gun system including connectable internal structural components, and the '938 Patent is

generally directed to the electrical connections to a wireless detonator within a perforation gun.

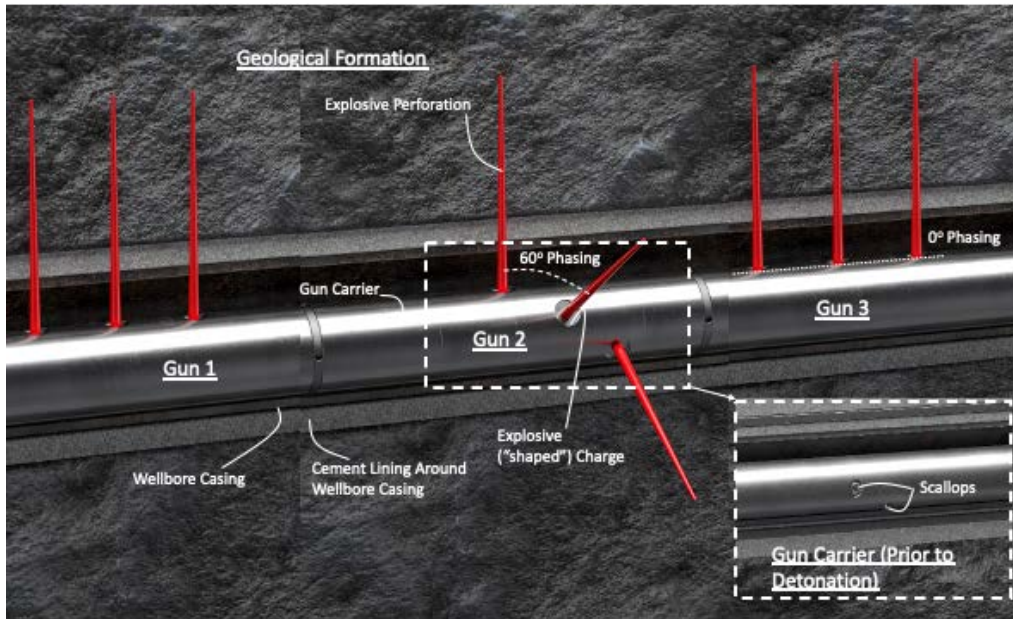
Perforation guns are specialized assemblies that include explosives and are deployed into oil and gas wells where the explosives are detonated to “perforate” hydrocarbon-containing underground formations, for extracting fossil fuels and natural gas from the underground formations. *See* Dkt. 65 (“Dyna Tutorial”) at 4; Declaration of John Rodgers, Ph.D. (“Rodgers Decl.,” attached hereto as Exhibit A) ¶¶ 15-18. A conventional single-gun assembly with a portion of the carrier cut away to expose the shaped (i.e., explosive) charges within is shown in the following figure. *See* Dyna Tutorial at 10; Rodgers Decl. ¶¶ 19-20.



Service companies and perforation gun manufacturers have developed a variety of perforating gun systems designed to meet the wide variety of specific needs for each unique wellbore in an oil field. Dyna Tutorial at 5; Rodgers Decl. ¶ 27. Prior to each job, the perforating system is designed to match and be compatible with, among other things: 1) the type of shaped charge required for the surrounding geological formation; 2) shot or charge “phasing,” i.e., the angular offset between the direction in which successive shaped charges point and therefore fire to ensure that the geological formation is perforated along the most productive fracture lines; and 3) the number and density of shaped charges used in each gun carrier to optimize the length of the perforation gun system and string of perforation guns to which it may be attached for deployment in a wellbore. Dyna Tutorial

at 5, 8; Rodgers Decl. ¶¶ 17, 21-23, 27.

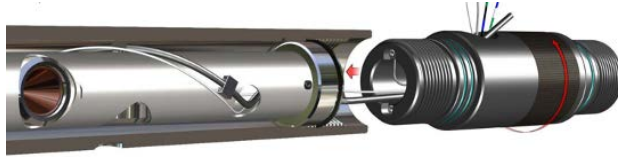
With conventional perforating guns, shot phasing is fixed by the design and manufacture of the loading tube and carrier components, which are built for a particular shot phasing pattern:



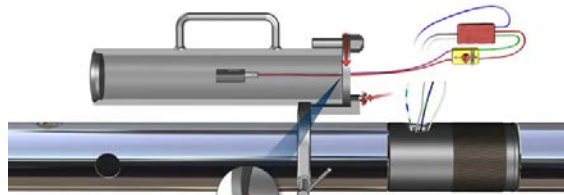
Dyna Tutorial at 8; Rodgers Decl. ¶ 23. Once a gun system is selected for a specific well, the guns are delivered to the wellsite where trained technicians load the charges and detonation cord into the loading tubes and insert them into the carriers. Dyna Tutorial at 7-12; Rodgers Decl. ¶¶ 28-29. This loading process requires careful attention to safety protocols given the energetic materials involved. Dyna Tutorial at 13-14; Rodgers Decl. ¶ 30. If the assembly is not done correctly, the gun may not fire properly, resulting in a misfire. *Id.* The perforating guns are further transferred to the wellsite without a detonator connected to other explosive components, to eliminate any risk of an unplanned detonation of the detonation cord and/or shaped charges. As a result, the gun assembly process must be continued at the wellsite, again requiring an array of safety and regulatory requirements to be met. *Id.*

Once at the wellsite, when using conventional guns, the critical step is connecting the detonator and the electrical system to the loaded guns. For example, the below figure illustrates

assembly and wiring procedures for conventional perforation gun systems.



Dyna Tutorial at 7; Rodgers Decl. ¶ 31. In this figure, the firing sub on the right is shown as it interfaces the gun. The electrical wires and the detonation cord from the gun must be pulled into the firing sub and out through a port in the side wall called a port plug. Dyna Tutorial at 9, 11; Rodgers Decl. ¶ 32. Next, the electrical connections are made to the detonator, followed by the ballistic connection to the detonation cord as illustrated in the figure below. Dyna Tutorial at 11; Rodgers Decl. ¶ 32.



The wire connections between the detonator (temporarily housed in the detonator safety tube), the switch, and the wires running to the gun—shown below—are made by hand, using electricians' tools such as wire cutters, wire strippers, and scotch-lock connectors. Dyna Tutorial at 12; Rodgers Decl. ¶ 33.



Figure 47



Figure 48

Once the electrical connections have been tested, the detonator is attached to the detonation cord, completing the ballistic system. Dyna Tutorial at 11-12; Rodgers Decl. ¶ 34. The components are then pushed into the firing sub through the port plug opening, and the port plug is installed to seal

the opening and finalize the assembly process. *Id.*

This conventional process of assembling and arming wireline or select-fire perforation guns is tedious, dangerous, and rife with opportunities for errors that can cause misfires. Dyna Tutorial at 13-14; Rodgers Decl. ¶ 35. Every electrical connection must be properly made and care must be taken to avoid pinched wires or shorts to the steel of the firing sub and guns. *Id.* This leaves many opportunities for miswiring or other electrical integrity issues that can disable a gun such that it will not fire when commanded. *Id.* The two most common causes for misfires during wireline perforating operations historically have been wiring issues and leaking o-ring seals, such as on the port plug. *Id.*

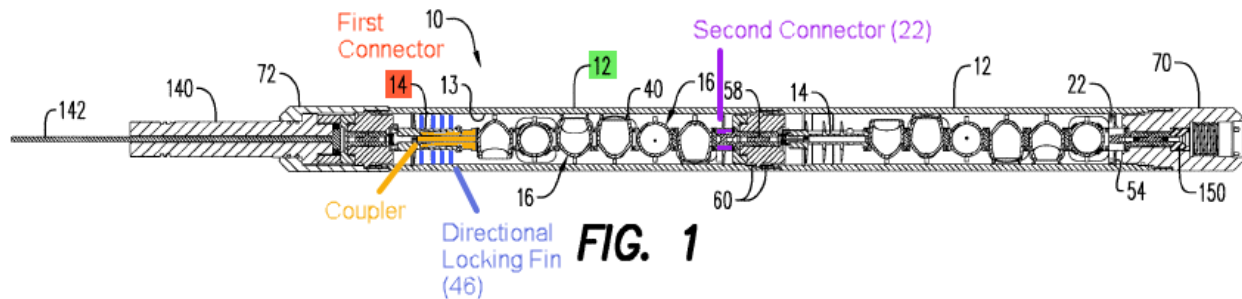
Conventional perforation guns are limited by, *inter alia*, fixed shaped charge phasing and orientation in highly-engineered and machined metal charge tubes and required onsite assembly of the charge tube, positioning of the charge tube into a gun carrier, and on-site wiring of electrical and ballistic connections used to relay electrical detonation signals and detonate the shaped charges. Dyna Tutorial at 7-14; Rodgers Decl. ¶ 36. The inventors of the Patents-in-Suit removed these limitations and ushered in the era of modular, “pre-wired,” factory-assembled perforation guns that do not require cumbersome on-site assembly of internal components or wiring of electrical and/or ballistic connections. Dyna Tutorial at 18; Rodgers Decl. ¶ 37. These new and improved perforating gun systems contain contactable electrical feedthrough connections (as opposed to wired connections) that replace the wiring and crimping between successive perforating guns in a string that was used in the prior art conventional systems. This invention, therefore, reduces labor costs and assembly time, eliminates much of the possibility for human error inherent in conventional systems, and greatly reduces the risk of inadvertent ignition or detonation.

## **B. The '161 Patent**

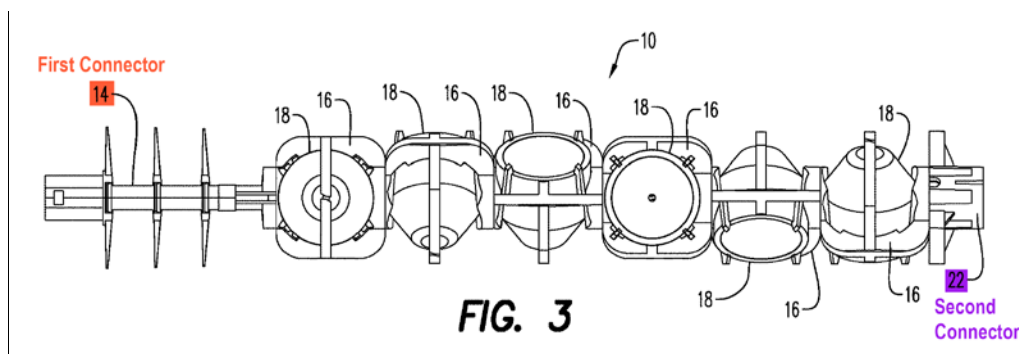
The '161 Patent is generally directed to improvements to perforation guns and methods of assembly thereof in the oil and gas perforating industry. Rodgers Decl. ¶ 38; Dkt. 1-1, '161 Patent

at 1:19-24. In particular, the '161 Patent is focused on the internal components of a perforating gun system designed as a modular system and that could be provided to customers as a modular perforating gun system kit. Dyna Tutorial at 18; Rodgers Decl. ¶ 38. With reference to annotated FIG. 1 below, which illustrates two modular perforating gun assemblies in a gun string, representative Claim 1 of the '161 Patent recites:

1. A perforation gun system comprising:
  - a gun carrier;
  - a first connector comprising a coupler for providing energetic coupling between a detonator and a detonation cord, and at least one directional locking fin for locking the first connector within the gun carrier; and
  - at least one second connector positioned in the gun carrier spaced apart from the first connector, wherein the second connector is configured for terminating the detonation cord in the perforation gun system,
 wherein at least one of the first and second connectors receive electrical connections therethrough.



The modular gun system of the '161 Patent includes an outer gun carrier (*see* FIG. 1, above) and internal components (*see* FIG. 3, below) for positioning the detonation cord and shaped charges and defining the shot phasing for the gun, along with a detonator. Dyna Tutorial at 21-26; Rodgers Decl. ¶ 39; '161 Patent at 1:62-3:40.



A top connector 14 and a bottom connector 22 sandwich the stack of charge-positioning components, including stackable charge holders and spacers, within the carrier. Rodgers Decl. ¶ 39; '161 Patent at 2:20-33. The top connector at the left of FIG. 3 provides the upper anchor for the stack of charge holders, houses the detonator, and provides the ballistic coupling to the end of the detonation cord. Rodgers Decl. ¶ 41; '161 Patent at FIG. 3, 6:17-18, 7:3-7. The top connector also includes radially-extending locking fins for locking within the carrier. Rodgers Decl. ¶ 41; '161 Patent at 7:3-7.

Key benefits of the inventions claimed in the '161 Patent include orienting shaped charges in a selectable phasing (as opposed to fixed shaped charge phasing), easily inserting and locking the modular assembly of gun internals within the gun carrier, and simplifying assembly and arming of perforation gun strings at a wellsite, to enhance reliability, efficiency, and safety. Rodgers Decl. ¶ 52. These advancements described and claimed in the '161 Patent avoid certain drawbacks of conventional perforation guns and enable a substantial leap forward in oilwell perforation technology, providing operators with potential cost savings and reliability improvements. *Id.*

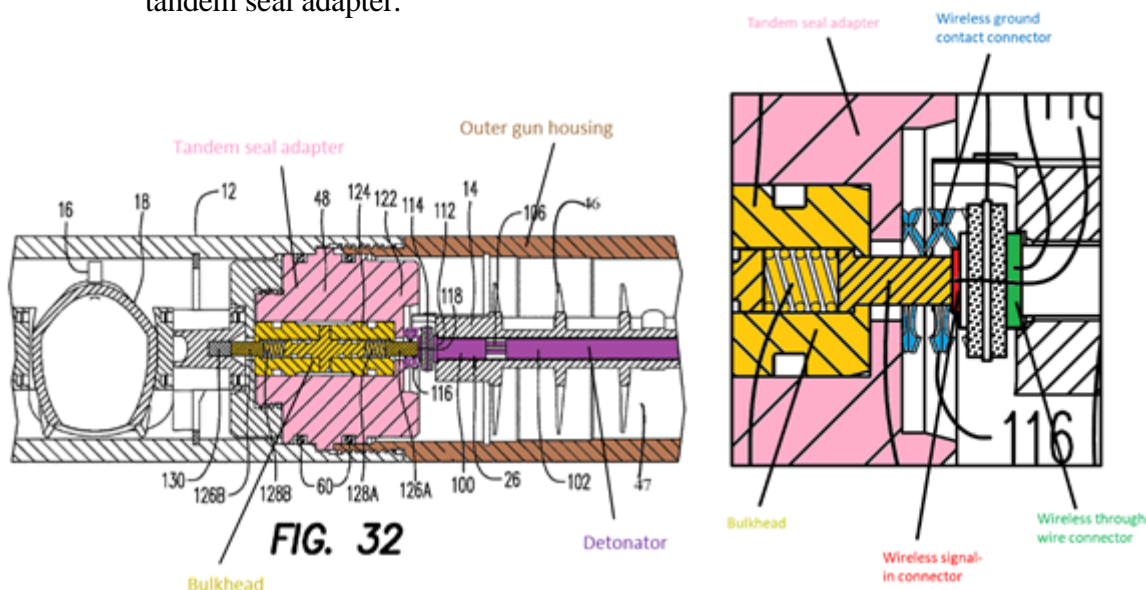
### C. The '938 Patent

The '938 Patent belongs to the same patent family as the '161 Patent—both claim priority to the same application but protect patentably distinct inventions. The '938 Patent and the '161 Patent share the same specification. Rodgers Decl. ¶ 53.

Like the '161 Patent, the '938 Patent is directed to improvements to perforation guns and methods of assembly thereof in the oil and gas perforating industry. Rodgers Decl. ¶ 54; Dkt. 1-2,

'938 Patent at 1:22-27. Specifically, the '938 Patent is directed to the electrical connections to a wireless detonator within a perforation gun. Dyna Tutorial at 18, 28-34; Rodgers Decl. ¶ 55. With reference to annotated FIG. 32 below, representative Claim 1 of the '938 Patent recites:

1. A perforating gun, comprising:
  - an outer gun carrier;**
  - a charge holder positioned within the outer gun carrier and including at least one shaped charge;
  - a detonator** contained entirely within the outer gun carrier, the detonator including a detonator body containing detonator components,
    - a wireless signal-in connector, a wireless through wire connector, and a wireless ground contact connector,** and
    - an insulator electrically isolating the wireless signal-in connector from the wireless through wire connector; and,
  - a bulkhead,** wherein the bulkhead includes a contact pin in wireless electrical contact with the wireless signal-in connector, wherein at least a portion of the bulkhead is contained within **a tandem seal adapter,** and the wireless ground contact connector is in wireless electrical contact with the tandem seal adapter.



For the electric relay, a tandem seal adapter connects adjacent guns and retains a bulkhead that supports the electric relay. Rodgers Decl. ¶ 55; '938 Patent at FIG. 19. The claimed modular detonator includes a shell, a “line-in” electrical contact, a “line-out” electrical contact, and an electrical ground contact that contacts and grounds the detonator to the tandem seal adapter. Rodgers Decl. ¶ 55; '938 Patent at FIG. 27.

Key benefits of the invention claimed in the '938 Patent include providing factory assembled modular components and a wirelessly-connectable, selective detonator, thus simplifying electrical assembly of perforation gun strings at a wellbore site to enhance reliability, operational efficiency, and safety. Rodgers Decl. ¶ 56. The claimed detonator with wireless electrical contacts permits “pre-wired,” factory-assembled perforation guns that do not require on-site wiring of electrical and/or ballistic connections and eliminates the risk of inadvertent detonations from stray electrical current or voltage, reducing potential safety problems with surface handling of explosives and minimizing the assembly time by removing the need for hand-wiring or crimping wires at the wellsite. *Id.* The claimed perforating gun system can operate more efficiently than conventional perforating systems and can achieve improvements in safety, operational efficiency, and performance reliability. *Id.*

#### **IV. STATEMENT OF THE ISSUES AND STANDARD OF REVIEW**

The issue before the Court is whether the following four disputed terms require construction, when terms are generally given their plain and ordinary meaning in view of the claims and specification:

- directional locking fin ('161 Patent);
- tandem seal adapter ('938 Patent);
- signal-in connector ('938 Patent); and
- through wire connector ('938 Patent).

Where the district court's claim construction relies on only intrinsic evidence, the construction is a legal determination reviewed *de novo*. *Teva Pharms. USA, Inc. v. Sandoz, Inc.*, 135 S. Ct. 831, 834, 574 U.S. 318, 320 (2015). A district court's subsidiary fact findings about extrinsic evidence are reviewed for clear error. *Id.*

## V. LEGAL STANDARDS

The “claim construction inquiry . . . begins and ends in all cases with the actual words of the claim.” *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1324 (Fed. Cir. 2002). Claim terms “are generally given their ordinary and customary meaning,” which is “the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005). Courts “depart from the plain and ordinary meaning of claim terms based on the specification in only two instances: lexicography and disavowal.” *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). However, “[t]he standards for finding lexicography and disavowal are exacting.” *Id.* “‘To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning’ and must ‘clearly express an intent to redefine the term.’” *Id.* (citations omitted). Similarly, “[d]isavowal requires that ‘the specification [or prosecution history] make[] clear that the invention does not include a particular feature,’ or is clearly limited to a particular form of the invention.” *Id.* at 1372 (citations omitted).

Claim construction begins with the intrinsic evidence: the words of the claims themselves, the specification, and the prosecution history. *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582-83 (Fed. Cir. 1996). The Federal Circuit has noted that “[i]n most situations, an analysis of the intrinsic evidence alone will resolve any ambiguity in a disputed claim term.” *Id.* at 1583. In these cases, “it is improper to rely on extrinsic evidence.” *Id.* In fact, courts should view extrinsic evidence in general “as less reliable than the patent and its prosecution history.” *Phillips*, 415 F.3d at 1318.

While it is appropriate for a court to consider a patent’s specification for guidance as to the meaning of the claims, the specification must be used only to interpret the meaning of a claim, and not to confine patent claims to the embodiments described therein. *Phillips*, 415 F.3d at 1317, 1323. One of the bedrock principles of claim construction is that the claims of a patent, not the specification

or the embodiments described therein, define the invention to which the patentee is entitled the right to exclude. *Id.* at 1312.

## VI. DISPUTED TERMS

One term of the '161 Patent and three terms of the '938 Patent are in dispute. Dkt. 61. DynaEnergetics respectfully submits that none of these terms require construction. They should be interpreted in accordance with their plain and ordinary meanings because they would have been well understood by a person of ordinary skill in the art (“POSITA,” *see* Rodgers Decl. ¶ 63) at the time of the invention, in view of the claims and specifications of the Patents-in-Suit. If construction is helpful to the jury, DynaEnergetics offers alternative constructions for two terms consistent with their plain and ordinary meanings. In contrast, Hunting’s proposed constructions impermissibly seek to narrow the scope of the asserted claims by importing limitations from the specification and wholly disregarding the express claim language and the intrinsic record, violating the bedrock principles of claim construction set forth above. Hunting’s proposed interpretations should be rejected.

### A. “directional locking fin” (’161 Patent)

DynaEnergetics’ Construction	Hunting’s Construction
Plain and ordinary meaning, which is “member that extends from the first connector and presses against an inner surface of the gun carrier”	A fin that is engageable with a complementarily shaped structure housed within the carrier to lock the position of the first connector along the length of the carrier.

The term “directional locking fin” appears in asserted claim 1 of the '161 Patent. Claim 1 below is representative of the claims in which “directional locking fin” appears:

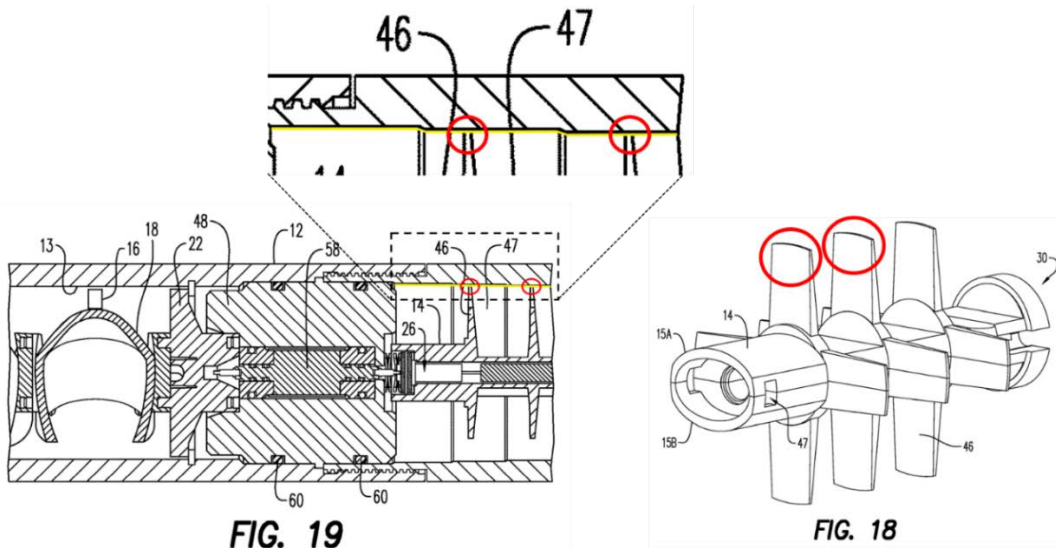
1. A perforation gun system comprising:
  - a gun carrier;
  - a first connector comprising a coupler for providing energetic coupling between a detonator and a detonation cord, and at least one **directional locking fin** for locking the first connector within the gun carrier; and
  - at least one second connector positioned in the gun carrier spaced apart from the first connector, wherein the second connector is configured for terminating the detonation cord in the perforation gun system,

wherein at least one of the first and second connectors receive electrical connections therethrough.

'161 Patent, claim 1 (emphasis added).

Based on the claim language and specification, the meaning of the term “directional locking fin” is clear on its face, and the dispositive intrinsic record supports that the term should have its plain and ordinary meaning. Rodgers Decl. ¶ 76; *see Cat Tech LLC v. TubeMaster, Inc.*, 528 F.3d 871, 884 (Fed. Cir. 2008) (“The appropriate starting point for claim construction ‘is always with the language of the asserted claim itself.’” (citation omitted)). A POSITA would understand from the plain language of '161 Patent claims 1 and 13 that a directional locking fin is a member that extends from the first connector in a direction towards the gun carrier and engages the gun carrier. Rodgers Decl. ¶ 77. For example, in the context of the claim language “locking the first connector within a gun carrier,” a POSITA would understand that a “fin” is a structure or member, such as a fin on an airplane or a fish, that extends in a particular direction (i.e., towards the gun carrier) to engage the gun carrier and thereby lock the first connector within the gun carrier. *Id.* The clause “for locking the first connector within a gun carrier” indicates that the first connector is positioned inside the gun carrier and the fin will extend from the first connector to the gun carrier through the space within the gun carrier, thus directionally “locking” the first connector to the gun carrier. *Id.*

The '161 Patent specification and figures support this understanding of a POSITA. *Id.* ¶ 78. For example, the '161 Patent describes an embodiment where the top connector 14 includes at least one directional locking fin 46, *see, e.g.,* FIG. 18 (annotated below), and the directional locking fin 46 is engageable with a corresponding complementarily shaped structure 47 housed within the carrier 12, *see, e.g.,* FIG. 19 (annotated below), “to lock the position of the top connector along the length of the carrier 12.” '161 Patent at 6:65-7:7.



The structures 47 with which the directional locking fin(s) 46 are engaged as shown in FIG. 19 are reduced inner diameter portions (highlighted in yellow) of “an inner surface 13 or diameter of the gun carrier 12.” *Id.* at 6:57-58; *see also id.* at FIG. 22, Rodgers Decl. ¶ 79. In the embodiment shown in FIG. 19, for example, each directional locking fin 46 on the connector 14 engages a corresponding reduced inner diameter portion at its position. Rodgers Decl. ¶ 79. A POSITA would understand—at least from FIGS. 18 and 19 and the corresponding description—that the locking fins 46 press against the reduced inner diameter portions 47 to lock or fix the top connector 14 to the carrier 12 and to prevent axial and/or radial movement of the top connector 14 relative to the carrier 12. *Id.* In other words, once the top connector 14 is pushed into engagement with the carrier 12, it cannot be pulled back out in the opposite direction. *Id.* A POSITA would understand that this locking effect results from the locking fins 46 extending between top connector 14 and the carrier 12 as the locking fins 46 are pushed into the reduced diameter portions 47 within the carrier 12. *Id.* During insertion, each locking fin 46 presses progressively harder against the carrier 12 as the locking fin 46 passes across a step-down between adjacent reduced inner diameter portions 47. *Id.* In this way, the locking fins 46 in this embodiment will prevent axial and radial movement, and rotation, of the top connector 14 with respect to the carrier 12. *Id.*

As a result, in view of the claim language and specification, there is no ambiguity in the term “directional locking fin.” A POSITA would understand the term to have its plain and ordinary meaning, consistent with the PTAB’s finding in its decision denying institution of Hunting’s ’161 Patent PGR Petition that “all claims terms [including ‘directional locking fin’] should take on their ordinary and customary meaning.” No. 17-cv-3784, Dkt. 72-30 at 11. If construction of “directional locking fin” is helpful to the jury, the term should be construed consistent with its plain and ordinary meaning, which is a “member that extends from the first connector and presses against an inner surface of the gun carrier.” Rodgers Decl. ¶ 80.

In contrast, Hunting proposes a litigation-inspired narrowing of the overall scope of the claimed invention through construction of this term. However, Hunting’s proposed construction is improper for a number of reasons. First, Hunting’s proposed construction uses the term “fin”—which is a part of the disputed term—in its definition. Thus, Hunting’s proposed construction would not provide any additional clarity to a POSITA as to the meaning of “fin” beyond its plain and ordinary meaning. Rodgers Decl. ¶ 82; *see Abbott Labs. v. Sandoz, Inc.*, 544 F.3d 1341, 1360 (Fed. Cir. 2008) (“‘Claim construction’ is for the purpose of explaining and defining terms in the claims, and usually requires use of words other than the words that are being defined.”).

Moreover, the portion of Hunting’s proposed construction requiring that the fin be “engageable with a complementarily shaped structure housed within the carrier” impermissibly imports the element and limitations of “a complementarily shaped structure housed within the carrier” into the claim and confines the patent claims according to the following embodiment described in the specification:

In an embodiment, as shown in FIGS. 11 to 18, the top connector 14 includes at least one directional locking fin 46. Although the use of the directional locking fin is described, other methods of directional locking may be used, in order to eliminate a top snap ring that would otherwise be used to lock the assembly. As better shown in

FIG. 19, the locking fins 46 are engageable with corresponding complementarily shaped structures 47 housed within the carrier 12, upon a rotation of the top connector 14, to lock the position of the top connector along the length of the carrier 12.

'161 Patent at 6:65–7:7 (emphasis added); *see Phillips*, 415 F.3d at 1323. A POSITA would appreciate that the term “directional locking fin” is not limited to this portion of the specification, which simply describes “an embodiment” of the '161 Patent. Rodgers Decl. ¶ 83. A POSITA further would appreciate that other options would have been known and available and that neither the claim as a whole nor the “directional locking fin” term requires a “complementarily shaped structure,” either on its face or when read in view of the specification. *Id.* The patentee did not act as its own lexicographer when describing a “directional locking fin” in the context of one embodiment of the '161 Patent, where the embodiments disclosed by the '161 Patent are expressly described as non-exhaustive. *See id.*; '161 Patent at 5:21-35; *see also Laryngeal Mask Co. Ltd. v. Ambu*, 618 F.3d 1367, 1372 (Fed. Cir. 2010) (when a patentee merely describes a figure showing a preferred embodiment, the patentee is not acting as his/her own lexicographer); *see also Hill-Rom Servs.*, 755 F.3d at 1371. Hunting’s construction is thus improperly narrow.

The portion of Hunting’s proposed construction requiring “[a] fin . . . to lock the position of the first connector along the length of the carrier” likewise impermissibly limits the patent claims to an embodiment described in the specification. *See* Rodgers Decl. ¶ 83; '161 Patent at 6:65–7:7; *Phillips*, 415 F.3d at 1323. As set forth above, the claims and specification indicate to a POSITA that the directional locking fin(s) lock the first connector in the gun carrier axially (along the length of the carrier) and/or radially. Hunting’s proposed construction improperly reads axial locking from an embodiment into the claims but omits the alternative radial locking illustrated in, e.g., FIG. 19 of the '161 Patent. All that the claims of the '161 Patent—the starting point for claim construction—require is that the directional locking fin is “for locking the first connector within the gun carrier.” '161 Patent claim 1 (emphasis added). The claims do not require that the directional locking fin(s)

lock the first connector “along the length of the carrier.” Moreover, as demonstrated in the table below, the portion of Hunting’s construction requiring “lock[ing] the position of the first connector along the length of the carrier” defeats the claim language indicating that the at least one directional locking fin is “for locking the first connector within the gun carrier”:

Claim Element—’161 Patent claim 1	Claim Element with DynaEnergetics’ Alternative Construction	Claim Element with Hunting’s Construction
a first connector comprising a coupler for providing energetic coupling between a detonator and a detonation cord, and at least one <b>directional locking fin</b> for locking the first connector within the gun carrier	a first connector comprising a coupler for providing energetic coupling between a detonator and a detonation cord, and at least one <b><u>member that extends from the first connector and presses against an inner surface of the gun carrier</u></b> for locking the first connector within the gun carrier	a first connector comprising a coupler for providing energetic coupling between a detonator and a detonation cord, and at least one <b><u>fin that is engageable with a complementarily shaped structure housed within the carrier to lock the position of the first connector along the length of the carrier</u></b> for locking the first connector within the gun carrier

Constructions that give meaning to all claim terms (DynaEnergetics’ alternative construction) are favored over constructions that render a limitation superfluous (Hunting’s construction). *See Mformation Techs., Inc. v. Research in Motion Ltd.*, 764 F.3d 1392, 1399 (Fed. Cir. 2014).

For at least these reasons, a POSITA would understand the term “directional locking fin” to have its plain and ordinary meaning. Accordingly, no construction is needed. However, if construction would be helpful to the jury, DynaEnergetics requests that the Court reject Hunting’s contrived, narrow construction, which impermissibly reads in limitations from the specification and renders other claim limitations superfluous, and instead construe the term “directional locking fin” as having its plain and ordinary meaning, which is a “member that extends from the first connector and presses against an inner surface of the gun carrier.”

**B. “tandem seal adapter” (’938 Patent)**

DynaEnergetics’ Construction	Hunting’s Construction
Plain and ordinary meaning, which is “a component that creates a seal between adjacent gun housings and provides a channel to receive a bulkhead”	An adapter attached to and sealing adjacent outer gun carriers from the outside environment.

The term “tandem seal adapter” appears in asserted claims 1 and 9 of the ’938 Patent. Claim 1 below is representative of the claims in which “tandem seal adapter” appears:

1. A perforating gun, comprising:
  - an outer gun carrier;
  - a charge holder positioned within the outer gun carrier and including at least one shaped charge;
  - a detonator contained entirely within the outer gun carrier, the detonator including
    - a detonator body containing detonator components,
    - a wireless signal-in connector, a wireless through wire connector, and a wireless ground contact connector, and
    - an insulator electrically isolating the wireless signal-in connector from the wireless through wire connector; and,
  - a bulkhead, wherein the bulkhead includes a contact pin in wireless electrical contact with the wireless signal-in connector, wherein
  - at least a portion of the bulkhead is contained within a **tandem seal adapter**, and the wireless ground contact connector is in wireless electrical contact with the **tandem seal adapter**.

’938 Patent, claim 1 (emphases added).

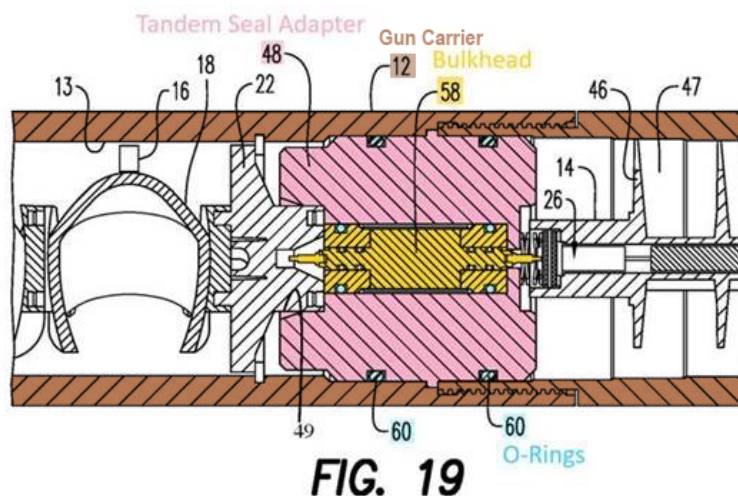
The term “tandem seal adapter”—though not a common industry term—is well-defined and described in the claims and specification of the ’938 Patent and should have its plain and ordinary meaning. Rodgers Decl. ¶¶ 90-91; *see Phillips*, 415 F.3d at 1312-13. If construction is helpful, a POSITA would understand from the plain language of claims 1 (above) and 9 that a tandem seal adapter is “a component that creates a seal between two gun housings and provides a channel to receive or accommodate a bulkhead.” Rodgers Decl. ¶ 91. The ’938 Patent specification and figures support this understanding. *Id.* ¶ 92.

For example, the ’938 Patent explains that “[t]he tandem seal adapter 48 is configured to seal the inner components within the carrier 12 from the outside environment, using sealing means 60

(shown herein as o-rings). Thus, the tandem seal adapter 48 seals the gun assemblies from each other . . . .” ’938 Patent at 7:55-8:5; Rodgers Decl. ¶ 92. This establishes that the tandem seal adapter is a component that creates a seal between two gun housings. Rodgers Decl. ¶ 92.

The ’938 Patent further describes that “the tandem seal adapter 48 . . . fully contains the bulkhead assembly 58” (’938 Patent at 7:55-8:5), this “pin connector assembly including the bulkhead 124 . . . is positioned within the tandem seal adapter 48,” (’938 Patent at 8:28-39) and “pushing in a bulkhead (element 58 in FIG. 19) onto [*sic* – into] the tandem seal adapter” (’938 Patent at 10:1-14). *See* Rodgers Decl. ¶ 93. This demonstrates that the tandem seal adapter provides a channel to accommodate a bulkhead. A POSITA further would understand that such a channel to accommodate a bulkhead is necessary for establishing electrical connections between guns.

The figures of the ’938 Patent further support a POSITA’s understanding that the tandem seal adapter 48 (shown in pink below) provides a seal between adjacent gun housings 12 (shown in brown below) through o-rings 60 (shown in blue below), and also provides a channel to receive a bulkhead 58 (shown in yellow below), as illustrated by exemplary FIG. 19 (annotated below):



The term tandem seal adapter therefore should be interpreted consistent with its plain and ordinary meaning in view of the claims and specification, which—to the extent construction is helpful for the jury—is a “component that creates a seal between two gun housings and provides a

channel to accommodate a bulkhead.” Rodgers Decl. ¶ 95.

In contrast, Hunting’s proposed construction impermissibly narrows the overall scope of the claimed invention by rewriting the claims to require the presence of two outer gun carriers when the independent claims expressly recite only one—“an outer gun carrier.” Rodgers Decl. ¶ 97. Specifically, Hunting’s proposed construction requires that the tandem seal adapter is “attached to and sealing adjacent outer gun carriers from the outside environment.” That is, Hunting’s proposed construction necessitates introducing an entirely new element (a second outer gun carrier) to the claim, in violation of the canons of claim construction. *See Phillips*, 415 F.3d at 1323. In comparison, the portion of DynaEnergetics’ alternative construction of tandem seal adapter as “a component that creates a seal between adjacent gun housings” simply describes the function of the tandem seal adapter without reading another element (a second outer gun carrier) into the ’938 Patent claims. *See* Rodgers Decl. ¶ 97. Hunting’s proposal also impermissibly imports from the specification the limitation that the tandem seal adapter “seal[s] adjacent outer gun carriers from the outside environment,” another limitation that is not in the claim language and impermissibly narrows the claim. *See Phillips*, 415 F.3d at 1323.

For at least these reasons, Hunting’s proposed construction should be rejected. A POSITA readily would understand the term “tandem seal adapter” and its plain meaning in view of the ’938 Patent claims and specification such that no construction is needed. DynaEnergetics further offers an alternative construction of “tandem seal adapter” as “a component that creates a seal between adjacent gun housings and provides a channel to receive a bulkhead,” consistent with its plain and ordinary meaning, if the Court believes that would be helpful to the jury.

**C. “signal-in connector” (’938 Patent)**

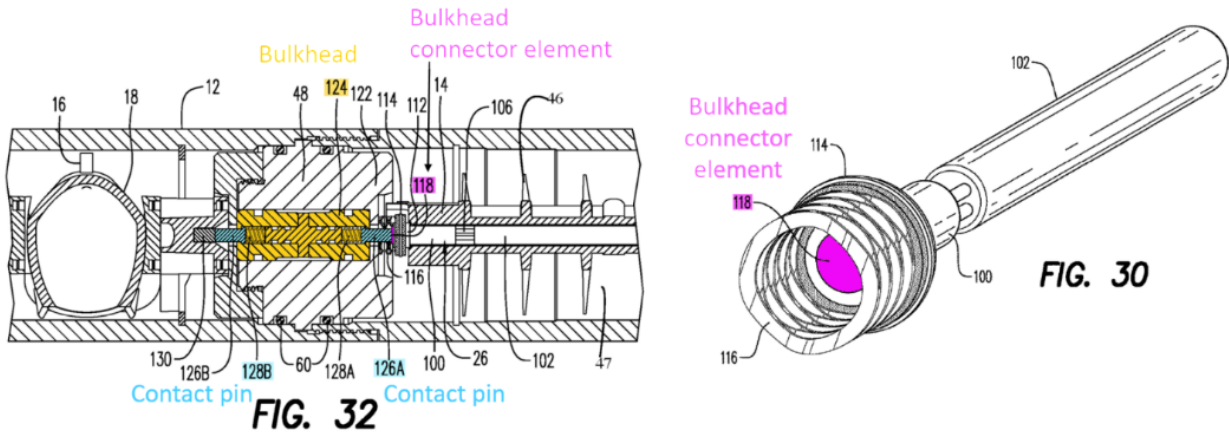
<b>DynaEnergetics’ Construction</b>	<b>Hunting’s Construction</b>
Plain and ordinary meaning	An electrical connector connected to a signal-in wire.

This term appears in asserted claims 1, 7, 8, 9, and 12 of the '938 Patent. Claim 1 below is representative of the claims in which “signal-in connector” appears:

1. A perforating gun, comprising:
  - an outer gun carrier;
  - a charge holder positioned within the outer gun carrier and including at least one shaped charge;
  - a detonator contained entirely within the outer gun carrier, the detonator including
    - a detonator body containing detonator components,
    - a wireless **signal-in connector**, a wireless through wire connector, and a wireless ground contact connector, and
    - an insulator electrically isolating the wireless **signal-in connector** from the wireless through wire connector; and,
  - a bulkhead, wherein the bulkhead includes a contact pin in wireless electrical contact with the wireless **signal-in connector**, wherein
    - at least a portion of the bulkhead is contained within a tandem seal adapter, and the wireless ground contact connector is in wireless electrical contact with the tandem seal adapter.

'938 Patent, claim 1 (emphases added). Each instance of “signal-in connector” in the '938 Patent claims is preceded by the word “wireless.” '938 Patent at claims 1, 4, 7-9, 12, 13, 16, 20. The meaning of “signal-in connector” in the context of the '938 Patent claims requires no construction because the term is clearly described in the specification and claims of the '938 Patent and well-understood by a POSITA. *See* Rodgers Decl. ¶¶ 99-103. There is no ambiguity that the connector is wireless.

Specifically, the '938 Patent specification describes a “push-in detonator that does not use wires to make necessary connections,” '938 Patent at 6:8-9, including the wireless electrical contact connection between the bulkhead connector element 118 (i.e., “wireless signal in connector”) and a contact pin of the bulkhead 124, *id.* at 8:12-19, 31-37. *See* Rodgers Decl. ¶ 101. The wireless electrical contact connection between the bulkhead connector element 118 and the contact pin 126A/126B of the bulkhead 124 replaces the previous wired connections. '938 Patent at 6:8-11, 24-28, FIGS. 30, 32 (annotated); Rodgers Decl. ¶ 101.



As understood by a POSITA, the wireless detonator assembly 26 described in the '938 Patent “allows the detonator to be installed with minimal tooling and wire connections.” '938 Patent at 8:25-27; Rodgers Decl. ¶ 102. The specification further discloses that “[n]o tools are required to install the detonator or any electrical connections.” '938 Patent at 9:18-19; Rodgers Decl. ¶ 102. Thus, a POSITA would understand that as used in the '938 Patent, the term “connector” refers to the wireless contacts. Rodgers Decl. ¶ 102. For these same reasons, a POSITA would understand that the term “signal-in connector” as used in the '938 Patent claims is consistent with its plain and ordinary meaning in view of the claims and specification. Rodgers Decl. ¶ 103. No further construction is needed.

Hunting defines the term “signal-in connector” as “an electrical connector connected to a signal-in wire,” improperly adding the requirement that the “signal-in connector” be “connected to a signal-in wire.” Rodgers Decl. ¶ 104. The “connected to” limitation is not only absent from the express language of the '938 Patent claims, it is antithetical to the claim language. *Id.* In reality, as acknowledged by Dr. Fleckenstein (Hunting’s expert), “the ‘signal-in connector’ within the context of the claims does not connect or attach to anything.” Declaration of William Fleckenstein, Ph.D. (“Fleckenstein Decl.,” attached hereto as Exhibit B) ¶ 33. As set forth herein, a POSITA would understand that the “signal-in connector” is a wireless electrical contact or connector, as expressly

required by the claim language in view of the specification. *See* '938 Patent, claims 1, 4, 7- 9, 12, 13, 16, 20; Rodgers Decl. ¶ 104.

Moreover, Hunting's proposed construction uses the term "connector"—which is a part of the disputed term—in its definition. Hunting's proposed construction thus would not provide any additional clarity to a POSITA as to the meaning of "connector" beyond its plain and ordinary meaning. *See Abbott Labs.*, 544 F.3d at 1360.

For at least these reasons, Hunting's construction, which is contrary to the claim language, should be rejected. A POSITA would understand that the meaning of the term "signal-in connector" as used in the '938 Patent is consistent with its plain and ordinary meaning, and the additional limitations proposed by Hunting should be rejected.

**D. "through wire connector" ('938 Patent)**

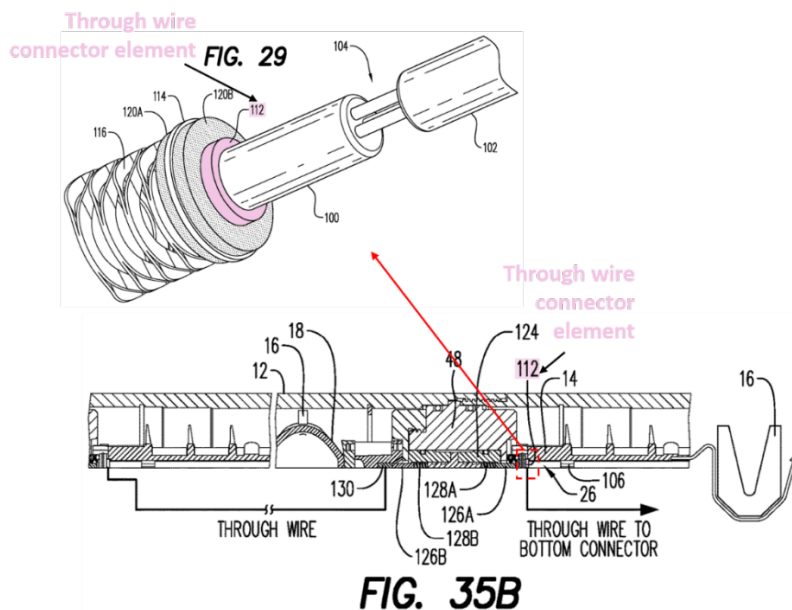
DynaEnergetics' Construction	Hunting's Construction
Plain and ordinary meaning	A connector that is connected to the through wire within the perforating gun.

This term appears in asserted claims 1, 8, 9, and 12 of the '938 Patent. Claim 1 below is representative of the claims in which "through wire connector" appears:

1. A perforating gun, comprising:
  - an outer gun carrier;
  - a charge holder positioned within the outer gun carrier and including at least one shaped charge;
  - a detonator contained entirely within the outer gun carrier, the detonator including
    - a detonator body containing detonator components,
    - a wireless signal-in connector, a wireless **through wire connector**, and a wireless ground contact connector, and
    - an insulator electrically isolating the wireless signal-in connector from the wireless **through wire connector**; and,
  - a bulkhead, wherein the bulkhead includes a contact pin in wireless electrical contact with the wireless signal-in connector, wherein
  - at least a portion of the bulkhead is contained within a tandem seal adapter, and the wireless ground contact connector is in wireless electrical contact with the tandem seal adapter.

'938 Patent, claim 1 (emphases added). Like “signal-in connector,” each instance of “through wire connector” in the '938 Patent claims is preceded by the word “wireless.” '938 Patent at claims 1, 2, 8, 9, 12, 13, 15. The meaning of “through wire connector” in the context of the '938 Patent claims requires no construction because the term is clearly described in the specification and claims of the '938 Patent and well-understood by a POSITA. *See* Rodgers Decl. ¶¶ 106-111.

Specifically, the '938 Patent specification teaches that “necessary connections” for the push-in detonator include the wireless electrical contact connections between the various connector or contact elements, including the through wire connector element 112 and making contact with a through wire, “whose ends are connectors.” '938 Patent at 6:8-9, 6:24-28, 8:10-14, FIGS. 28, 29 and 35B; Rodgers Decl. ¶ 108.



The wireless electrical contact connection between the through wire connector element 112 and the through wire replaces the previous wired connections. *See* '938 Patent at 6:8-9, 6:24-28; Rodgers Decl. ¶ 108. A POSITA would understand that the through wire connector element 112 is the through wire connector as claimed in the '938 Patent and that the term “connector” refers to the wireless contacts. Rodgers Decl. ¶ 109. For these same reasons a POSITA would understand that the

term “through wire connector” as used in the ’938 Patent is consistent with the plain and ordinary meaning of the term in view of the claims and specification. *Id.* ¶ 110. There is no ambiguity.

Hunting defines the term “through wire connector” as “a connector that is connected to the through wire within the perforating gun.” This “connected to” limitation is antithetical to the express claim language. *Id.* ¶ 111. In reality, as again acknowledged by Dr. Fleckenstein (Hunting’s expert), “Claim 2 [of the ’938 Patent] makes it clear that the through wire connector is simply in ‘contact’ with a through wire.” Fleckenstein Decl. ¶ 35. As with the “signal-in connector,” a POSITA would understand that the “through wire connector” would be a wireless electrical contact or connector, as expressly required by the claim language in view of the specification. *See* ’938 Patent, claims 1, 2, 8, 9, 12, 13, and 15; Rodgers Decl. ¶ 111. For at least this reason, Hunting’s construction, which is contrary to the claim language, should be rejected.

Hunting’s proposal further should be rejected as unhelpful to a jury. The limitation “[a] connector that is connected to the through wire within the perforating gun” adds unnecessary and confusing language because, e.g., ’938 Patent claim 1 already requires that the detonator including the through wire connector is “contained entirely within the outer gun carrier.” Rodgers Decl. ¶ 111. Further, Hunting’s proposed construction uses the term “connector,” part of the disputed term, thus failing to provide any additional clarity to a POSITA as to the meaning of “connector” beyond its plain and ordinary meaning. *See Abbott Labs.*, 544 F.3d at 1360.

Therefore, for the reasons set forth above, a POSITA would understand that the meaning of the term “through wire connector” as used in the ’938 Patent is consistent with its plain and ordinary meaning, and the additional limitations proposed by Hunting should be rejected.

## VII. CONCLUSION

For the foregoing reasons, DynaEnergetics respectfully requests that the Court adopt DynaEnergetics’ proposed constructions.

Dated: September 17, 2021

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that on September 17, 2021, I electronically filed the foregoing document with the Clerk of the Court using the CM/ECF system, which will send notification of such filing *via* electronic mail to all counsel of record.

/s/ Megan C. Moore  
Megan C. Moore